POLES

CONTENTS

1. GENERAL

1.1 This section provides REA borrowers, consulting engineers, contractors and other interested parties with technical information requirements for poles to be installed in the telephone systems borrowers.

1.2 All poles employed in the construction of REA borrowers' telephone systems shall be in accordance with REA Specification DT-5C (Electric) and PE-9 (Telephone), "Specification for Wood Poles, Stubs and Anchor Logs and for Preservative Treatment of These Materials". The specification describes the minimum acceptable quality of wood poles; and also covers the treatment, preservatives, and inspection to be employed for wood poles.

2. SPECIES

2.1 The acceptable species of timber for poles and the fiber stresses for these species as established by the American National Standards Institute (ANSI) are as follows:

TABLE I

Pole Specie	Fiber Stress	
	psi	MPa*
Western Larch		
Douglas Fir		
Southern Pine		
Alaska Yellow Cedar		
Jack Pine		
Lodgepole Pine		
Red Pine		
Western Red Cedar		
Ponderosa Pine		
Northern White Cedar		

*Megapascals

3. DIMENSIONS AND STRENGTH

3.1 Poles produced from species of timber which do not have the same fiber stress must differ in cross section and/or length to develop equal strength.

3.2 The minimum dimensions for poles from the various species of timber are tabulated in "American Standard Specifications and Dimensions for Wood Poles (05.1 - 1977)". The publication is available at a relatively nominal cost from the American National Standards Institute, 10 East 40th Street, New York, New York 10016.

3.3 The dimensions of poles are based on the circumference as measured at the top at a point corresponding to the minimum allowable length and at six feet from the butt, and the length as measured between the extreme ends of the pole. Exceptions to this basis for determining dimensions are discussed in the above-mentioned REA Specification DT-5C (Electric) and PE-9 (Telephone).

4. POLE CLASSES

4.1 A system has been established by the ANSI which separates poles into classes on the basis of their rated breaking loads. It contains eight classes usable for REA telephone borrowers plus six H classes used for electric transmission. The usable telephone classes are numbered one through nine, with eight being omitted. The following table shows the breaking load for each class:

TABLE II

Class	Breaking Load	
	lb-force	newtons
1	4500	20017
2	3700	16458
3	3000	13345
4	2400	10676
5	1900	8452
6	1500	6672
–	1200	5338
	740	3292

4.2   The numerical system of classifying poles is based on all poles within a class having the same breaking load regardless of the specie of timber and the dimensions of the pole. For example, a class 7 Southern Pine pole and a class 7 Northern White Cedar pole will both have a rated breaking load of 1200 pounds-force (5338 newtons); and a 20-foot (6.1 m) pole and a 35-foot (10.7 m) pole, in either species, will also have a rated breaking load of 1200 pounds-force.

4.3   A factor of safety is usually inherent in poles of all classes in all species because of the following:

4.31   The fiber stress stipulated for a particular specie of timber is determined by actually breaking poles produced from that specie. The value of fiber stress then established as the standard for that specie is based on the requirement that the majority of poles of the same specie will have a fiber strength equaling or exceeding -hat of the standard.

4.32   The rated breaking load of poles of a particular class is established by the ANSI on the basis that the poles, as measured six feet from the butt (paragraph 3.3), will have a certain minimum circumference, depending on the specie of timber. Poles will normally have circumferences larger than the stipulated minumum, and therefore, have higher breaking loads than the standard specified for the class.